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 Performance-Oriented Packaging Testing of Fuze, Multi-option, M734 (Less Booster and Lead)  
 for 60mm mortar, 120 fuzes per fiberboard box per drawing 9347415. (U)

 12. PERSONAL AUTHOR(S)  
 Yuen H. Lam, Mechanical Engineer

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 Performance Oriented Packaging (POP) Fuze, M734  
 Fuze, M745 9347415

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This report contains test results conducted on the M734 Multi-option Fuze (Less Booster and Lead) for 60mm Mortar packaged in fiberboard container per drawing 9347415. The tests were performed in accordance with the requirements of 49 CFR part 107 subpart M (18.600 et. al.) The packaging is submitted for performance-oriented packaging certification.

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20. DISTRIBUTION/AVAILABILITY OF ABSTRACT

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21. ABSTRACT SECURITY CLASSIFICATION

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 22a. NAME OF RESPONSIBLE INDIVIDUAL  
 Yuen H. Lam

 22b. TELEPHONE (Include Area Code)  
 201-724-2228

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I. Report Number: DOD POP HM TR/AYD 92-020

II. Title: Performance Oriented Packaging (POP) testing of M734  
Multi-Option Fuze (Less Booster and Lead), and M745  
Point Detonating Fuze (Less Booster and Lead) for 60mm,  
81mm, and 120mm Mortar Packed in a Fiberboard Container

Drawing Number: 9347415

Author: Yuen H. Lam

Performing Activity: ARDEC

Address: Department of the Army  
Commander, U.S. Army Armament Research, Development  
and Engineering Center  
Picatinny Arsenal, N.J. 07806-5000  
Attn: SMCAR-AEP

Date: February 1993

Distribution Statement A.

Approved for public release; distribution is unlimited.

1. Data:

Container:

Type: Box, Fiberboard  
UN Code: 4G  
Specification: PPP-B-636  
Drawing Number: 9347415  
Material: Fiberboard  
Maximum net mass: 23.6 kg (52 lbs)  
Dimensions: 53.5 cm X 32.5 cm X 21.3 cm  
(21 1/16 in X 12 13/16 in X 8 3/8 in)  
Gross Weight: 27.3 kg (60 lbs)

Product:

Name: Fuze, Multi-Option, M734 (Less Booster and Lead)  
Drawing Number: 11723071  
Cage Code: 19202  
United Nations Proper Shipping Name: Fuzes, Detonating  
United Nations Identification Number: 0410  
United Nations Packaging Group: II  
Physical State: Solid  
Number of fuzes per Container: 120  
National Stock Number (NSN): 1310-01-050-8898  
DOD Identification Code: N288

Name: Fuze, Point Detonating, M745 (Less Booster and Lead)  
Drawing Number: 11927103  
Cage Code: 19200  
United Nations Proper Shipping Name: Fuzes, Detonating  
United Nations Identification Number: 0410  
United Nations Packaging Group: II  
Physical State: Solid  
Number of fuzes per Container: 120  
National Stock Number (NSN): 1390-01-259-0660  
DOD Identification Code: N660

2. Reference Material:

- a. Federal Register, "49 CFR Part 107-179"
- b. United Nations, "Transport of Dangerous Goods"

### 3. Background:

This report details Performance Oriented Packaging (POP) tests performed on M734 Multi-Option Fuze (Less Booster and Lead) packed in a fiberboard container in accordance with drawing 9347415. Each fuze weighs approximately 0.41 lb. A package contains 120 fuzes. The POP tests were conducted using containers containing additional weights to insure container integrity. The weight of the packed out tested container was 70.5 lbs (32 kg). Tests were performed according to POP test regulations.

### 4. Test:

The following POP tests were performed at ambient temperature:

#### a. Vibration Test (178.608)

##### Procedure:

Two fiberboard containers were vibrated on a vibrating platform unrestrained for a one and half hour period. The double-amplitude (peak-to-peak displacement) was one inch and the frequency was 240 cycles per minute. The frequency was sufficient to allow the package to become completely airborne and enable a 1/16" piece of strapping material to be slid underneath the package during vibration.

##### Results:

After the tests, the fiberboard containers experienced no structural damage; there was no spillage of contents; the passing criterion was met.

#### b. Drop Test (178.603)

##### Procedure:

One of the packages that had been previously vibrated was reused for the five orientation drop tests: flat on the bottom, flat on the top, flat on the long side, flat on the short side, and on the corner. The height for all five drops was 4.0 ft (1.22 m).

##### Results:

There was no visible damage on the first four drops. On the fifth drop (on the corner), the impact corner received minor indentation. However, the container was still in a sound condition. All contents remained inside the container and the package was

capable of being handled without danger of spillage. The container exceeded the passing criteria of CFR 49 that required one new container to be subjected to one drop only.

c. Stacking Test (178.606)

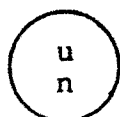
Procedure:

The fiberboard container that had been previously vibrated and dropped was reused for the stacking test. A dead load of 1,480 lbs was applied to the top of the container for a 24 hour period. This simulated a stack height of 16 ft (22 layers) of identical packages.

Results:

During the test, the container supported the load adequately. After the test, the container received a uniform compression of 1/8 of an inch. No structural damage was observed on the container after the test. The passing criterion was exceeded.

5. Based on the above POP testing, the following POP symbol has been applied to fiberboard containers in accordance with drawing 9347415.



4G/Y32/S/\*\*  
USA/DOD/AYD

Insert the last two digits  
of year packed.

DTIC QUALITY INSPECTED 1

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	